What is claimed is:

1. A cathode material, comprising:

a complex oxide including lithium (Li), manganese (Mn), chromium (Cr) and at least one kind selected from the group consisting of titanium (Ti), magnesium (Mg) and aluminum (Al),

wherein a composition ratio of lithium to the total of manganese, chromium, titanium, magnesium and aluminum in the complex oxide is larger than 1 in molar ratio.

2. A cathode material according to claim 1, wherein

the complex oxide is represented by a chemical formula $Li_aMn_bCr_cAl_{1-b-c}O_d$ (where the values of a, b, c and d are within a range of $1.0<a<1.6$, $0.5<b+c<1$ and $1.8<d<2.5$).

3. A cathode material according to claim 1, wherein

the complex oxide is represented by a chemical formula $Li_{1+e}(Mn_fCr_gM_{1-f-g})_{1-e}O_h$ (where M is at least one kind of element selected from the group consisting of titanium, magnesium and aluminum, and the values of e, f, g and h are within a range of $0<e<0.4$, $0.2<f<0.5$, $0.3<g<1$, $f+g<1$ and $1.8<h<2.5$).

4. A method of manufacturing a cathode material, the cathode material comprising a complex oxide including lithium (Li), manganese

(Mn), chromium (Cr) and at least one kind selected from the group consisting of titanium (Ti), magnesium (Mg) and aluminum (Al), the method comprising the step of:

mixing materials with ethanol or water as a dispersion medium to synthesize the complex oxide.

5. A battery, comprising:

a cathode;

an anode; and

an electrolyte,

wherein the cathode comprises a complex oxide including lithium (Li), manganese (Mn), chromium (Cr) and at least one kind selected from the group consisting of titanium (Ti), magnesium (Mg) and aluminum (Al), and a composition ratio of lithium to the total of manganese, chromium, titanium, magnesium and aluminum in the complex oxide is larger than 1 in molar ratio.

6. A battery according to claim 5, wherein

the complex oxide is represented by a chemical formula $Li_aMn_bCr_cAl_{1-b-c}O_d$ (where the values of a, b, c and d are within a range of $1.0<a<1.6$, $0.5<b+c<1$ and $1.8<d<2.5$).

7. A battery according to claim 5, wherein

the complex oxide is represented by a chemical formula $Li_{1+e}(Mn_fCr_gM_{1-f-g})_{1-e}O_h$ (where M is at least one kind of element selected from the group consisting of titanium, magnesium and aluminum, and the values of e, f, g and h are within a range of $0<e<0.4$, $0.2<f<0.5$, $0.3<g<1$, $f+g<1$ and $1.8<h<2.5$).